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The Influence of Technological Pedagogical and Content Knowledge, Computer Self-Efficacy and School Culture on Teachers' Technostress Moderated by Organizational Support in the Era of Educational Digitalization

Asri Nofa Rama[1], Djafar Ahiri[2], Alberth[3], La Ndia[4]

Abstract

Digital transformation encourages teachers to integrate technology intensively in learning. However, this change also gives rise to technostress, which is psychological pressure due to the inability to adapt to new technology. This study aims to analyze the Influence of Technological Pedagogical and Content Knowledge, Computer Self-Efficacy and School Culture on Teacher Technostress Moderated by Organizational Support in the Era of Educational Digitalization. This study uses a quantitative method with a causal approach involving 256 respondents consisting of ASN teachers at Public High Schools in Kendari City who have implemented digital learning intensively, selected through Proportional Random Sampling techniques. Data were analyzed using Structural Equation Modeling (SEM) to test the direct effect and moderating effect of organizational support. The results showed that TPACK had a negative and significant effect on teacher technostress with a path coefficient value of -0.252 ($p < 0.05$). Computer Self-Efficacy had a negative and significant effect on teacher technostress, with a path coefficient of -0.238 ($p < 0.05$). School culture has a negative and significant effect on teacher technostress, with a path coefficient of -0.243 ($p<0.05$). Moderation analysis confirmed that organizational support does not have a significant effect in moderating the relationship between TPACK and Technostress where the path coefficient value is -0.064 ($p>0.05$). Organizational support does not significantly moderate the relationship between Computer Self-Efficacy and Technostress where the path coefficient value is -0.170 ($p>0.05$). Organizational support significantly moderates the relationship between School Culture and teacher Technostress with a path coefficient value of 0.229 ($p<0.05$). These findings provide important implications for education policy, particularly in efforts to strengthen teachers' technopedagogical competence and digital literacy, as well as aligning organizational support with school culture to create a work environment that supports the sustainable digital transformation of education.

Keywords: *School Culture, Computer Self-Efficacy, Organizational Support, Teachers, Technological Pedagogical and Content Knowledge, Technostress*

Introduction

The development of digital technology has driven significant transformations in the world of education, forcing teachers to integrate various digital devices and applications into their learning practices. These changes not only demand technical readiness but also impact teachers' psychological and professional aspects, such as workload, cognitive demands, and the pressure of adapting to new technologies. The COVID-19 pandemic has further accelerated the shift to online learning, exposing disparities in digital readiness among teachers and increasing the risk of technostress, a psychological stress resulting from an individual's inability to adapt to new technologies (Panisoara et al., 2020; Tarafdar et al., 2011). Globally, various organizations such as UNESCO (2021) and the OECD (2021) emphasize the importance of teacher competence in managing technology-based learning as a key to successful 21st-century education. However, research shows that most teachers feel unprepared to integrate technology effectively, which has a negative impact on their mental well-being and professional performance. In Indonesia, this issue is increasingly relevant. Various studies show that 60% to 75% of teachers experience emotional exhaustion due to the intensity of technology use in learning (Effendi et al., 2025; Nendra et al., 2022). This challenge is exacerbated by limited infrastructure, low teacher digital literacy, and unequal access to technology training, especially between urban and rural areas (Kaluge, 2024; Zahra, 2023). These conditions emphasize that

[1]Halu Oleo University, Kendari, Indonesia (corresponding author).
[2] Halu Oleo University, Kendari, Indonesia.
[3] Halu Oleo University, Kendari, Indonesia
[4] Halu Oleo University, Kendari, Indonesia

technostress is not just an individual problem, but a structural challenge in the Indonesian education ecosystem.

Previous research has identified several key factors influencing technostress, including Technological Pedagogical and Content Knowledge (TPACK) (Koehler, 2006), computer self-efficacy (Bandura, 1977), school culture, and organizational support. TPACK competency and confidence in technology use have been shown to reduce technostress (Dong et al., 2020; Erdoğan & Akbaba, 2022; Gökbulut, 2021). Furthermore, a positive school culture and adequate organizational support also act as protective factors, reducing teachers' psychological distress (Rastegar & Rahimi, 2023; Wang et al., 2023). However, these studies generally focus on one or two variables, without developing an integrative model that comprehensively examines the interrelationships between factors, particularly in the Indonesian context with its unique social, cultural, and infrastructural characteristics. Therefore, this study aims to fill the conceptual and empirical gaps by developing a comprehensive model that simultaneously examines the role of TPACK, computer self-efficacy, school culture, and organizational support on technostress among high school teachers in Kendari City. This approach is expected to provide significant scientific contributions to the development of evidence-based policies to support a healthy and sustainable digital education transformation.

Research Methods

This study uses a quantitative method with a causal approach, which aims to examine the causal relationship between variables objectively and measurably through numerical data. The population of this study was all 706 teachers from 12 public high schools in Kendari City, Southeast Sulawesi. Sampling used a proportional random sampling technique, resulting in 256 respondents as the main sample. The research instrument was a closed questionnaire with a Likert scale of 1-5 that had been modified and adapted from relevant previous studies (Compeau & Higgins, 1995; Eisenberger et al., 1986; Gruenert, 1998; House, 1981; Kabakci Yurdakul et al., 2012; Naci Çoklar Necmettin Erbakan Üniversitesi et al., 2017). The questionnaire consisted of several parts, namely: the TPACK scale, the computer self-efficacy scale, the technostress scale, the school culture scale, and the organizational support scale. All instruments were tested for validity and reliability through a tryout with a Cronbach's Alpha > 0.7 to ensure data reliability. The data analysis technique in this study used Structural Equation Modeling (SEM) version 4 to examine the direct relationship between variables and the role of organizational support as a moderating variable.

Research Result

Evaluation of Measurement Model

Table 1 Fornell Larcker's discriminant validity value

	AVE	School Culture	Organizational Support	Computer Self-Efficacy	TPACK	Technostress
School Culture	0.65	**0.806**				
Organizational Support	0.586	0.207	**0.765**			
Computer Self-Efficacy	0.715	0.72	0.247	**0.845**		
TPACK	0.727	0.699	0.148	0.736	**0.853**	
Technostress	0.666	-0.624	-0.261	-0.653	-0.614	**0.816**

Source: Data Processing With PLS, 2025

Based on the calculation results using the Fornell-Larcker criterion, it is known that the correlation values between constructs are below the square root of the AVE (shown in bold on the diagonal of the table). This indicates that each construct is more strongly correlated with the indicators that form it compared to the other constructs. Thus, all constructs in this study have met the criteria for discriminant validity. In addition, the AVE value for all constructs is above 0.50, which indicates that each construct is able to explain more than half of the variance of its indicators. Therefore, it can be concluded that the measurement model in this study has good discriminant validity and is suitable for use in the structural model testing stage.

Table 2 Discriminant validity values of HTMT

	School Culture	Organizational Support	Computer Self-Efficacy	TPACK	Technostress
School Culture	0.214				
Organizational Support	0.731	0.254			
Computer Self-Efficacy	0.706	0.152	0.746		
TPACK	0.639	0.269	0.665	0.624	
Technostress					

Source: Data Processing With PLS, 2025

Based on the Heterotrait-Monotrait Ratio (HTMT) calculation results, all correlation values between constructs were recorded below the threshold of 0.90. This indicates that there is no overlap (redundancy) between constructs, and each variable in the model can be empirically distinguished. Thus, all constructs in this study have met the discriminant validity criteria based on the HTMT approach, which strengthens the validity of the measurement model in distinguishing one construct from another.

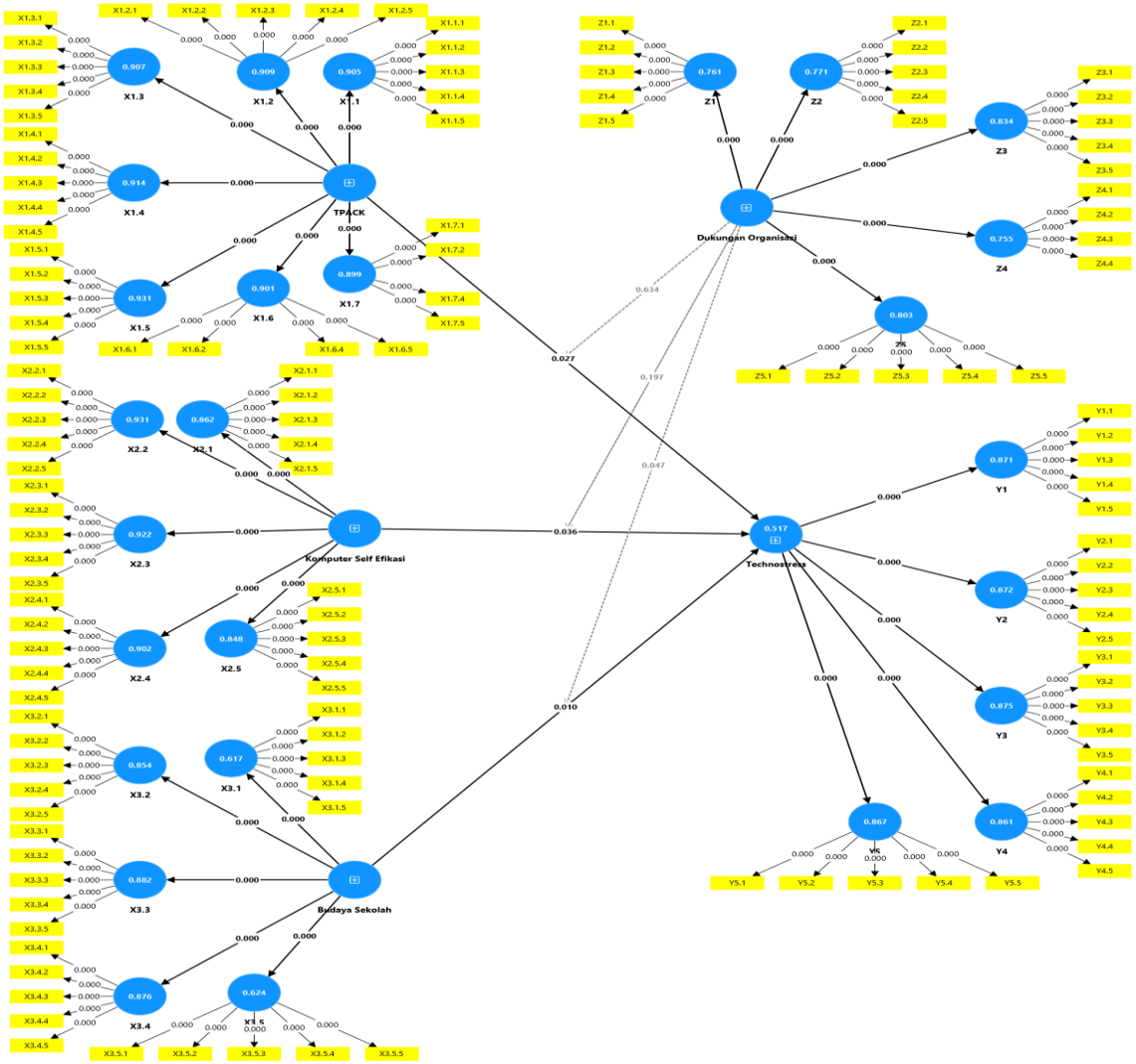
Table 3 Reliabilitas

	Cronbach's alpha	Composite reliability (rho_c)	Information
School Culture	0.977	0.979	Reliable
Organizational Support	0.969	0.971	Reliable
Computer Self-Efficacy	0.983	0.984	Reliable
TPACK	0.988	0.989	Reliable
Technostress	0.979	0.980	Reliable

Source: Data Processing With PLS, 2025

Based on the results of construct reliability testing, all variables in this study showed a very high level of internal consistency. This is indicated by the Cronbach's Alpha and Composite Reliability (rho_c) values for each construct, all of which were above the minimum threshold of 0.70. The highest Cronbach's Alpha value was found in the TPACK construct (0.988), followed by Computer Self-Efficacy (0.983), while the lowest value remained in the reliable category, namely Organizational Support (0.969). The Composite Reliability value also showed a similar pattern with a range between 0.971 and 0.989, which confirms that the indicators in each construct are able to measure variables consistently and stably.

Structural Model Evaluation



R-Square (R^2)

Table 4 R-Square Values

	R-square	R-square adjusted
Technostress	0,517	0,504

Source: Data Processing With PLS, 2025

The adjusted R-square value of 0.504 indicates that the exogenous variables in the research model, namely TPACK, computer self-efficacy, school culture, and organizational support, together are able to explain 50.4% of the variance in the endogenous variable, namely Technostress. Meanwhile, the remaining 49.6% is explained by other factors outside this research model. Based on the interpretation guidelines of Hair et al. (2021), the R^2 value of 0.50 is included in the moderate category, which means the model has quite good predictive ability and is relevant in explaining the influence of exogenous variables on Technostress. Thus, it can be concluded that the structural model of this study has adequate explanatory power and is worthy of proceeding to the hypothesis testing stage.

Predictive Relevance (Q^2)

Table 5 Q-Square Values

	SSO	**SSE**	**Q^2 (=1-SSE/SSO)**
Technostress	**6400.000**	4221.754	0.340

Source: Data Processing With PLS, 2025

Based on the calculation of the Q^2 value for the Technostress construct, the SSO value was 6,400,000 and the SSE value was 4,221,754, resulting in a Q^2 value of 0.340. This value indicates that the model has good predictive ability for the endogenous variable Technostress. Referring to the interpretation criteria of (Chin, 1988) and (Hair et al., 2022), the Q^2 value of 0.340 is in the moderate to near-high predictive relevance category, meaning that the structural model is able to significantly explain and predict variations in technostress experienced by respondents. Thus, the exogenous constructs used in the model, such as TPACK, computer self-efficacy, school culture, and organizational support, have a relevant contribution in influencing technostress in the context of educational digitalization.

Goodness of Fit

	Saturated model	Estimated model
SRMR	0,053	0,058
d_ULS	99,934	116,863
d_G	n/a	n/a
Chi-square	infinite	infinite
NFI	n/a	n/a

Source: Data Processing With PLS, 2025

Berdasarkan hasil output SmartPLS, diperoleh nilai SRMR sebesar 0,053 untuk *saturated model* dan 0,058 untuk *estimated model*. Nilai SRMR tersebut berada di bawah ambang batas 0,08, sehingga model dinyatakan memiliki *good fit* (Hair et al., 2021). Nilai *d_ULS* pada model saturated sebesar 99,934 dan pada model estimated sebesar 116,863, menunjukkan perbedaan yang tidak signifikan sehingga dapat disimpulkan model stabil dan sesuai dengan data empiris. Sementara itu, nilai *Chi-square* dan *NFI* tidak digunakan dalam PLS-SEM karena pendekatan estimasi berbasis varians, bukan kovarians. Dengan demikian, model penelitian yang dikembangkan dapat dikatakan memiliki tingkat *Goodness of Fit* yang baik dan layak untuk digunakan dalam pengujian hipotesis lebih lanjut.

Pengujian Hipotesis Penelitian

Path Coefficient (Mean, STDEV, T-Values)

Influence between variables	Original sample (O)	P values
TPACK -> Technostress	-0.252	0.027
Computer self-efficacy -> Technostress	-0.238	0.036
School culture -> Technostress	-0.243	0.010
Organizational support x TPACK -> Technostress	-0.064	0.634
Organizational support x Computer self-efficacy -> Technostress	-0.170	0.197
Organizational support x School culture -> Technostress	0.229	0.047

Source: Data Processing With PLS, 2025

The results of the test of the relationship between the TPACK variable and Technostress show a path coefficient value of -0.252 with a t-statistic value of 2.212. This value is greater than the t-table of 1.960, and the p-value of 0.027 is below the 0.05 significance level ($p \leq 0.05$). Based on these results, it can be concluded that H_0 is rejected, so that the first hypothesis in this study is stated to be empirically supported. Thus, TPACK has a negative and significant direct effect on teacher technostress.

The results of data processing using SmartPLS, obtained the original sample value (O) as the path coefficient, as well as the t-statistic value to test its significance. The results of testing the second hypothesis show that the Computer Self-Efficacy variable has a path coefficient value of -0.238 with a t-statistic value of 2.092. This value is greater than the t-table value of 1.960, and the p-value is below 0.05, namely $0.036 < 0.05$. Thus, H_0 is rejected, which means that the second hypothesis is empirically proven. These results indicate that Computer Self-Efficacy has a negative and significant direct influence on Technostress.

The results of testing the third hypothesis show that the School Culture variable has a path coefficient of -0.243 with a t-statistic value of 2.580. This value is greater than the t-table (1.960) and the p-value

is below 0.05 (0.010 < 0.05), which indicates that the relationship is statistically significant. Based on these results, H_0 is rejected, so the third hypothesis in this study is stated to be empirically supported. Thus, School Culture has a negative and significant direct influence on Technostress.

The results of testing the fourth hypothesis show that the interaction between Organizational Support and TPACK on Technostress produces a path coefficient of -0.064 with a t-statistic value of 0.477. This value is smaller than the t-table (1.960), and the p-value is greater than 0.05 (0.634 > 0.05), which indicates that the relationship is not statistically significant. Based on these results, H_0 is accepted, so the fourth hypothesis is not empirically supported. Thus, it can be concluded that organizational support does not have a significant influence in moderating the relationship between TPACK and Technostress.

The results of testing the fifth hypothesis show that the interaction between Organizational Support and Computer Self-Efficacy on Technostress produces a path coefficient of -0.170 with a t-statistic value of 1.988. Although the t-statistic value is slightly larger than the t-table value (1.960), this result is not supported by a significance value (p-value) which is still above the significance limit of 0.05 (0.197 > 0.05), so the relationship is not statistically significant. Therefore, H_0 is accepted, which means that the fifth hypothesis is not empirically proven. Thus, it can be concluded that Organizational Support does not significantly moderate the relationship between Computer Self-Efficacy and Technostress.

The results of testing the sixth hypothesis show that the interaction between Organizational Support and School Culture on Technostress produces a path coefficient of 0.229 with a t-statistic value of 1.988. This value is greater than the t-table value (1.960) and the p-value is below 0.05 (0.047 < 0.05), so this relationship is declared statistically significant. Thus, H_0 is rejected, which means that the sixth hypothesis is empirically supported. These results indicate that Organizational Support has a significant influence in moderating the relationship between School Culture and teacher Technostress.

Discussion

The influence of TPACK on teacher technostress: The test results show that TPACK has a negative and significant effect on technostress. This finding is in line with the TPACK theory from (Koehler, 2006), and supports the Cognitive Load theory which states that individuals with better knowledge will be better able to manage cognitive load, so that the pressure or anxiety that arises from the use of technology can be minimized. The results of this study are also in line with research (Joo et al., 2016), namely teachers with high TPACK mastery tend to experience lower technological stress because they feel able to integrate technology meaningfully. This proves that teachers who understand the integration between technology, pedagogy, and content tend to feel more confident, adaptive, and efficient in using technology in learning. The influence of computer self-efficacy on teacher technostress: Computer Self-Efficacy has a direct and significant influence on teacher Technostress. The results of the analysis show that computer self-efficacy has a negative and significant influence on technostress. These findings support Bandura's (1986) view in Self-Efficacy Theory, which asserts that individuals with strong beliefs in their abilities are better able to face challenges, including the use of technology. These findings also align with the Technology Acceptance Model (TAM) (Davis, 1989), which explains that perceived ease of use is strongly influenced by self-efficacy.

Teachers with high CSE will be more receptive to technology, thereby reducing the tendency for technostress. Research by (Shu et al., 2011) also shows that computer self-efficacy is negatively correlated with technostress, as individuals feel more capable of overcoming technical difficulties independently. These results indicate that confidence in one's personal ability to operate technology is a protective factor against psychological stress caused by the digitalization of learning. The Influence of School Culture on Teacher Technostress: School culture has a direct and significant negative effect on technostress. This finding is in accordance with Organizational Culture Theory (Schein, 1985), which emphasizes the importance of organizational norms, values, and behaviors that support the well-being of members. A positive school culture provides a sense of security and support for teachers in facing technological challenges. School Climate Theory (Hoy & Miskel, 1991) also strengthens this finding by emphasizing that a supportive and collaborative school climate will reduce psychological stress, including technostress. These results are also in line with (Al-Fudail & Mellar, 2008) and (Zhao, 2021) who also emphasize that a healthy school culture reduces resistance and stress towards technology use. These results emphasize the importance of building a school culture that supports innovation and digital learning. The principal acts as a facilitator of a positive culture that is able to create a safe and empowering environment. Organizational Support moderates the effect of TPACK on Technostress. The results of the study indicate that the effect of school support as a moderator is not significant. This finding contradicts the Social Support Theory (House, 1981) which states that social support, including

organizational support, plays an important role in reducing individual work stress. However, in this context, teachers with high TPACK appear to rely more on their personal competence than on organizational support which is perceived as less relevant. This also contradicts the assumption of the JD-R model (Bakker & Demerouti, 2007) which assumes job resources (organizational support) should moderate job demands. Organizational Support moderates the effect of Computer Self-Efficacy on Teacher Technostress: the results of the study indicate that organizational support does not moderate the relationship between computer self-efficacy and teacher technostress. This finding contradicts the Organizational Support Theory (Eisenberger et al., 1986b) which states that perceived support from the organization will reduce work stress. However, in this study, teachers with high CSE appeared to be more confident in their own abilities to cope with technology than in seeking organizational assistance, so this support did not have a strong moderating effect. This study also contradicts the results of (Shu et al., 2011), which stated that organizational support strengthens the positive effect of CSE on reducing technostress. Teachers with high CSE levels appear to be quite independent, so additional support from the school does not affect the level of technostress they experience. Organizational Support moderates the effect of School Culture on Technostress: organizational support was shown to significantly strengthen the negative effect of school culture on technostress. The higher the organizational support perceived by teachers, the greater the effect of school culture in reducing technostress.

These results reinforce the novelty of this study. These findings provide a new conceptual contribution that organizational support not only functions as a direct factor, but also plays an important role as a moderator variable that strengthens the effect of socio-cultural variables (school culture) on technostress. This finding is in line with the Social Support Theory (House, 1981) which emphasizes that organizational support, whether instrumental, emotional, or informational, will strengthen the impact of a positive work environment in reducing stress and the Job Demands-Resources (JD-R) Model theory (Bakker & Demerouti, 2007), which explains that strong organizational resources (organizational support) magnify the positive effect of school culture in suppressing technostress. A healthy work environment (positive school culture) if reinforced by organizational support will maximize teacher well-being.

Conclusion and Future Research

Based on the results of data analysis using the Partial Least Squares Structural Equation Modeling (SmartPLS) method, several important findings were obtained that form the basis of the conclusions of this study. TPACK has a negative and significant influence on technostress. Computer Self-Efficacy has a negative and significant influence on technostress. School Culture has a negative and significant influence on technostress. Organizational Support does not have a significant effect in moderating the relationship between TPACK and technostress. Organizational Support also does not have a significant effect in moderating the relationship between Computer Self-Efficacy and technostress. Organizational Support has a significant effect in moderating the relationship between School Culture and technostress.

Future research is recommended to expand the research subjects to include non-civil servant teachers, contract teachers, private teachers, and teachers from non-formal educational institutions to more representatively reflect the diversity of educational contexts in Indonesia. Furthermore, the use of a mixed-methods approach by incorporating qualitative methods such as interviews or focus group discussions is recommended to delve deeper into the psychosocial aspects of technostress. Future research can also develop the model by adding mediating or moderating variables, such as resilience, workload, coping strategies, principal leadership, intrinsic motivation, or peer social support, to generate a more comprehensive understanding. Data collection should be optimized through hybrid methods (online and offline) to be more inclusive of respondents with diverse digital literacy. Furthermore, expanding the regional and institutional context, for example by comparing teachers in urban and rural areas, public and private schools, or across educational levels, will enrich the understanding of technostress contextually. Finally, experimental or classroom action research based on interventions to improve TPACK, school culture, and organizational support can be conducted to more measurably test the effectiveness of strategies to reduce teacher technostress

References

Al-Fudail, M., & Mellar, H. (2008). Investigating teacher stress when using technology. Computers & Education, 51(3), 1103–1110. https://doi.org/10.1016/j.compedu.2007.11.004

Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. Journal of Managerial Psychology, 22(3), 309–328. https://doi.org/10.1108/02683940710733115
Bandura, A. (1977). Social Learning Theory. Englewood Cliffs, NJ: Prentice Hall.
Bandura, A. (1986). Social Foundations of Thought and Action A Social Cognitive Theory (1st ed.). Prentice-Hall.
Chin, W. W. (1988). The Partial Least Squares Approach to Structural Equation Modeling. https://www.researchgate.net/publication/311766005
Compeau, D. R., & Higgins, C. A. (1995). Computer Self-Efficacy: Development of a Measure and Initial Test. MIS Quarterly, 19(2), 189–211. https://doi.org/10.2307/249688
Dong, Y., Xu, C., Chai, C. S., & Zhai, X. (2020). Exploring the Structural Relationship Among Teachers' Technostress, Technological Pedagogical Content Knowledge (TPACK), Computer Self-efficacy and School Support. Asia-Pacific Education Researcher, 29(2), 147–157. https://doi.org/10.1007/s40299-019-00461-5
Effendi, M. I., Dahniar, N., & Sulistyowati, D. (2025). Analisis Manajemen Stres dan Emosi Pada Guru di Sekolah: Ditinjau dari Aspek Budaya Jepang dan Indonesia. Kiryoku : Jurnal Ilmiah Pendidikan Bahasa Dan Sastra Jepang, 9(1), 154–171.
Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986a). Perceived organizational support. Journal of Applied Psychology, 71(3), 500–507. https://doi.org/10.1037/0021-9010.71.3.500
Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986b). Perceived organizational support. Journal of Applied Psychology, 71(3), 500–507. https://doi.org/10.1037/0021-9010.71.3.500
Erdoğan, E., & Akbaba, B. (2022). The Role of Gender, TPACK, School Support and Job Satisfaction in Predicting the Technostress Levels of Social Studies Teachers *. Egitim ve Bilim, 47(210), 193–215. https://doi.org/10.15390/EB.2022.11183
Gökbulut, B. (2021). The Relationship Between Teachers' Technostress and Their Techno-pedagogical Competence. KEFAD, 474–496.
Gruenert, S. (1998). SCHOOL CLIMATE SURVEY.
Hair, J. F., Tomas, G., Hult, M., Ringle, C. M., & Sarstedt, M. (2022). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). https://www.researchgate.net/publication/354331182
House, J. S. (1981). Work stress and social support (A. A. McLean, Ed.). Reading, MA: Addison-Wesley.
Joo, Y. J., Lim, K. Y., & Kim, N. H. (2016). The effects of secondary teachers' technostress on the intention to use technology in South Korea. Computers & Education, 95, 114–122. https://doi.org/10.1016/j.compedu.2015.12.004
Kabakci Yurdakul, I., Odabasi, H. F., Kilicer, K., Coklar, A. N., Birinci, G., & Kurt, A. A. (2012). The development, validity and reliability of TPACK-deep: A technological pedagogical content knowledge scale. Computers & Education, 58(3), 964–977. https://doi.org/10.1016/j.compedu.2011.10.012
Kaluge, A. H. (2024). Pemanfaatan AI untuk Meningkatkan Pemahaman Konsep Matematika di Era Digital. SEMNAPTIKA IV : "Pemanfaatan Artificial Intelligence" Dalam Pembelajaran 2.1 Berbasis Etnomatematika, 191–205.
Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge PUNYA MISHRA. Teachers College Record, 108(6), 1017–1054.
Naci Çoklar Necmettin Erbakan Üniversitesi, A., Naci ÇOKLAR, A., ProfDr Erkan EFİLTİ, A., & ProfDr Yusuf Levent ŞAHİN, A. (2017). Journal of Education and Practice www.iiste.org ISSN (Vol. 8, Issue 21). Online. https://www.researchgate.net/publication/329240087
Nendra, H. W., Sumargiyani, & Sunandi, A. D. (2022). Analisis Kejenuhan Belajar Peserta Didik Kelas XI SMAN 5 Yogyakarta Selama Pembelajaran Daring di Tengah Pandemi Covid-19. Jurnal Riset Teknologi Dan Inovasi Pendidikan, 5(2), 139–148.
OECD. (2021). Teachers and Leaders in Vocational Education and Training. OECD. https://doi.org/10.1787/59d4fbb1-en
Panisoara, I. O., Lazar, I., Panisoara, G., Chirca, R., & Ursu, A. S. (2020). Motivation and Continuance Intention towards Online Instruction among Teachers during the COVID-19 Pandemic: The Mediating Effect of Burnout and Technostress. International Journal of Environmental Research and Public Health, 17(21), 8002. https://doi.org/10.3390/ijerph17218002
Rastegar, N., & Rahimi, M. (2023). Teachers' post-pandemic outlook on the role of Technological and Pedagogical Content Knowledge in coping with burnout under adverse conditions: How a job demand transformed into a job resource. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1129910
Shu, Q., Tu, Q., & Wang, K. (2011). The impact of computer self-efficacy and technology dependence on computer-related technostress: A social cognitive theory perspective. International Journal of Human-Computer Interaction, 27(10), 923–939. https://doi.org/10.1080/10447318.2011.555313
Tarafdar, M., Tu, Q., Ragu-Nathan, T. S., & Ragu-Nathan, B. S. (2011). Crossing to the dark side. Communications of the ACM, 54(9), 113–120. https://doi.org/10.1145/1995376.1995403
UNESCO. (2021). Reimagining our futures together: a new social contract for education. UNESCO. https://doi.org/10.54675/ASRB4722
Wang, Z., Zhang, L., Wang, X., Liu, L., & Lv, C. (2023). Navigating Technostress in primary schools: a study on teacher experiences, school support, and health. Frontiers in Psychology, 14. https://doi.org/10.3389/fpsyg.2023.1267767
Zahra, N. (2023). Meningkatkan Inklusi dalam Indeks Literasi Digital Nasional: Dari Pengukuran hingga Pemberdayaan. Center for Indonesian Policy Studies (CIPS), 1–23.

Zhao, M. (2021). The Role of Autonomy, Status Conflict and Techno-complexity in Exhaustion and Self-efficacy: A Study with Chinese University Teachers [Master's Thesis]. ISCTE – Instituto Universitário de Lisboa.